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PTO/SB/33 (07-05)

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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)

081468-0309021

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Signature _____

Typed or printed name _____

Application Number

10/816,190

Filed

April 2, 2004

First Named Inventor

HANSEN et al.

Art Unit

2851

Examiner

K. GUTIERREZ

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

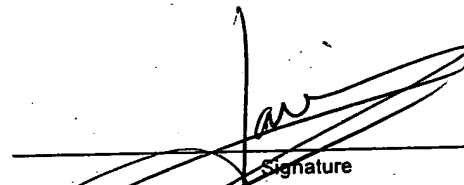
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

☒ attorney or agent of record. 54248
Registration number _____

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____


Signature
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March 2, 2007

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Attorney Docket: 081468-0309021
Client Reference: P-1535.010-US



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

Confirmation Number: 7518

HANSEN ET AL.

Application No.: 10/816,190

Group Art Unit: 2851

Filed: April 2, 2004

Examiner: K. GUTIERREZ

Title: DEVICE MANUFACTURING METHOD

March 2, 2007

ATTACHMENT SHEETS TO
PRE-APPEAL BRIEF CONFERENCE REQUEST

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Final Office Action dated October 2, 2006 and the Advisory Action dated February 6, 2007, Appellants hereby request that a panel of examiners formally review the legal and factual basis of the rejections in the above-identified application prior to the filing of an appeal brief. This request is being concurrently filed with a Notice of Appeal. The review is requested for the reasons provided in the Remarks beginning below. A total of 5 pages are provided.

APPEALED REJECTION

Appellants are appealing the rejections of claims 1-3, 9-10, 14 and 17-24 under 35 U.S.C. §103(a) based on Orino (U.S. Pub. No. 2003/0020892) (hereinafter "Orino") in view of Inoue *et al.* (U.S. Pat. No. 5,673,103) (hereinafter "Inoue"), claim 15 under 35 U.S.C. §103(a) based on Orino in view of Inoue and Nishi (U.S. Pat. No. 6,608,665) (hereinafter "Nishi") and claim 16 under 35 U.S.C. §103(a) based on Orino in view of Inoue, Nishi and Onanian (U.S. Pat. No. 4,568,148) (hereinafter "Onanian").

ARGUMENTS FOR TRAVERSAL

Regarding the obviousness rejections, Appellants simply rely on the basic criteria required to establish a *prima facie* case of obviousness. That is, first, *there must be some suggestion or motivation*, either in the references themselves or in the knowledge generally

available to one of ordinary skill in the art, *to modify the reference or to combine reference teachings*. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) *must teach or suggest all the claim limitations*. (see also, MPEP 2143-2143.03).

Appellants, therefore, traverse the prior art rejections under 35 U.S.C. §103(a) because, as will be evident by the following discussion, the applied references, whether taken alone or in combination, *do not* in any way, *teach or suggest each and every element* recited by the claims. Briefly stated, the Examiner appears to have woefully misinterpreted the teachings of the primary reference Orino, especially the disclosures regarding the masking blade 160 and its attributes, and has relied on such misinterpretation to errantly maintain the prior art rejections.

By way of review, Orino discloses an exposure apparatus that includes an illumination apparatus 100, a mask 200 and a projection system 300. (See, e.g., FIG. 1 of Orino). The illumination apparatus 100 includes a laser 110, a beam shaping system 120, an optical integrator 130, a condenser lens 140, a masking blade 160 and an image forming lens 170. *Id.* The optical integrator 130 uniformizes illumination light for illuminating the mask 200 and forms a plurality of point light sources which consists of a secondary light source (or an effective light source) at and around its light exit side. (See, e.g., paragraph 33 and FIG. 1 of Orino). The masking blade 160 restricts an illumination range on the plane of the mask 200 (or an exposure range of the plate W) as a plane to be illuminated. (See, e.g., paragraph 41 and FIG. 1 of Orino).

Despite the Office Action's assertions, there is simply nothing in Orino, Inoue and a combination thereof that remotely discloses, teaches or suggests a lithographic apparatus comprising, *inter alia*, **at least one pupil shaping element constructed and arranged to define an on-axis, substantially rectilinear intensity distribution on the beam at a pupil plane of the illumination system; and a polarizer constructed and arranged to impart a linear polarization to the beam,**" as recited in claim 1. In addition, there is simply nothing in Orino, Inoue and a combination thereof that remotely discloses, teaches or suggests a lithographic apparatus comprising, *inter alia*, **"at least one pupil shaping element constructed and arranged to impart an intensity distribution that is not symmetric in an interchange of two orthogonal axes at a pupil plane of the illumination system; and a polarizer configured to impart a linear polarization to the beam,"** as recited in claim 18.

The Examiner continues to insist that masking blade 160 of Orino corresponds to the pupil shaping element of the claimed invention. The Office Action asserts that the masking blade 160 is disposed at a pupil plane that is denoted “by the crossing of solid lines within the masking blade 160” in FIG. 1 of Orino. (See page 2 of the Office Action). The Office Action asserts that the masking blade 160 is located on a pupil plane by virtue of the fact that “Figure 1 of Orino depicts at least one chief ray passing through the center of masking blade. Thus it passes through a pupil plane.” (See page 2 of the Advisory Action). This is incorrect. The Office Action’s assertions are in complete contradiction with the teachings of Orino and the article (“Wolfram Research”) provided in the Advisory Action.

Masking blade 160 of Orino is merely a standard mechanism to define an illumination field on the mask (patterning device) to restrict an exposure area to be scanned. (See, e.g., paragraph 4, lines 14-15 of Orino). However, Orino makes clear that the masking blade 160 is arranged to define an illumination field at an *image/object plane*. Orino states: “[the illumination apparatus of Orino] arranges an exposure plane on the wafer, a pattern plane on the mask, and a plane of the masking blade 160A in a conjugate relationship.” (See, e.g., paragraph 4 of Orino). As shown in FIG. 1 of Orino, the mask blade 160 and the mask 200 are in a conjugate relationship (see the trajectory of the solid ray lines). In accordance with Orino’s teachings of FIG. 1, the mask 200 is positioned at an object plane relative to the wafer W and at an image plane relative to the mask blade 160. Accordingly, despite the Office Action’s assertion, the *masking blade 160 of Orino is positioned at an object plane, not at a pupil plane*. The Examiner *must* realize that *an object plane is not a pupil plane*.

Equally important is the fact that the solid ray lines that converge at the center of the masking blade 160 do not constitute a chief ray, as erroneously alleged by the Office Action. The chief ray in Orino is denoted with a dashed line and starts at the exit surface of the optical integrator 130, *which exit surface corresponds to a pupil plane* of the illumination apparatus 100 as clearly explained in paragraph 33 of Orino. In support of this, the only ray in FIG. 1 of Orino that leaves the system (130) along a line passing through the center of the pupil plane, i.e. the exit surface of the integrator 130, is the dashed line, not the solid line. Accordingly, based on the Office Action’s definition of a chief ray provided in the Advisory Action, the dashed line of Orino must be the chief ray. In further support of this, Orino discloses in paragraph 36 that the exit surface of the optical integrator 130 is the surface where an aperture stop could be provided. The ray that would leave the integrator 130 along a line passing through the center of the aperture stop is again the dashed line, not the solid

line. Thus, despite the Examiner's assertion, the dashed line shown in FIG. 1 of Orino is the chief ray.

Bearing in mind the facts that the dashed line is the chief ray and that the exit surface of the optical integrator 130 is a pupil plane, FIG. 1 of Orino clearly shows that the pupil plane at the exit surface of the optical integrator 130 of Orino is not imaged on the plane of the masking blade 160. Rather, FIG. 1 of Orino shows that the dashed line or chief ray traverses the masking blade 160 at the edge, not at the center. Thus, masking blade 160 is not positioned at a pupil plane. In so doing, Orino does not disclose, teach or suggest **at least one pupil shaping element constructed and arranged to define an on-axis, substantially rectilinear intensity distribution on the beam at a pupil plane of the illumination system**, as recited in claim 1.

As explained in pages 11 and 12 of Appellants' Amendments dated January 10, 2007, Inoue, Nishi and Onanian fail to remedy the deficiencies of Orino. As such any proper combination of Orino, Inoue, Nishi and Onanian cannot result, in any way, in the invention of claim 1.

The Office Action admits that Orino does not teach or suggest a polarizer that linearly polarizes the beam. (See page 5 of the Office Action,). Nevertheless, the Office Action states that there is a "suggestion of...using polarized light...at paragraph [0031], line 7" of Orino. Appellants strenuously disagree. That cited portion of Orino merely discloses using an incoherent laser beam (rather than a coherent laser beam from a conventional laser source) in the lithographic apparatus and then discloses an apparatus to create such an incoherent beam from a coherent beam by providing an optical path difference between two beam components of such a beam (e.g., p and s polarized components) and then merging the beam back into a single incoherent beam. Respectfully, that does not disclose, teach or suggest using a polarized radiation beam in the lithographic apparatus. Rather, it merely suggests using an incoherent beam.

The Office Action further alleges that the implementation of the polarizer of Inoue in the system of Orino would have been obvious to "promote the development of achieving an image of a high resolution as taught in prior art." (See page 2 of the Office Action). Respectfully, that does not provide a reasoned basis for the combination of Inoue and Orino. Specifically, the Office Action has not identified any specific teaching or suggestion in the prior art to combine these features – for example, the Office Action has not identified any teaching in the cited references about including a linear polarizer in the system of Orino to achieve an image of high resolution. Indeed, Appellants submit there is no such suggestion

or teaching as neither Orino nor Inoue has a hint of suggestion or teaching as to what the other lacks to form the claimed combination. Moreover, each of Orino and Inoue already "promote the development of achieving an image of a high resolution." Therefore, the Office Action's assertion does not advance the reasoning to combine Orino and Inoue. The Office Action's hindsight assertion simply does not identify how or why the disparate teachings of Orino and Inoue should be combined to yield the claimed invention.

Thus, as the combination of Orino, Inoue, Nishi and Onanian fails to *teach or suggest all the claim limitations* and as there is no *suggestion or motivation to modify the reference or to combine reference teaching*, it is respectfully submitted that any combinations of Orino, Inoue, Nishi and Onanian fail to present a *prima facie* case of obviousness.

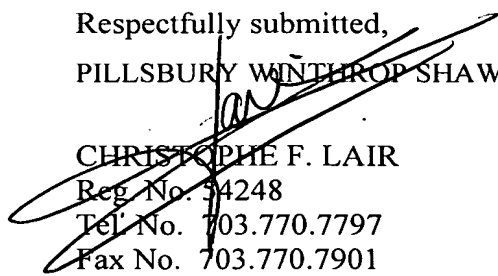
Independent claims 18 and 19 are patentable over the applied references for at least similar reasons as provided above for claim 1 and for the features recited therein. Claims 2-17 are patentable over the applied references at least by virtue of their dependency from claim 1 and for the additional features recited therein. Similarly, claims 22-24 are patentable over the applied references at least by virtue of their dependency from claim 18 and for the additional features recited therein. Likewise, claims 20-21 are patentable over the applied references at least by virtue of their dependency from claim 1 and for the additional features recited therein

CONCLUSION

Therefore, it is respectfully requested that the panel return a decision concurring with Appellants' position and eliminating the need to file an appeal brief because there are clear legal and/or factual deficiencies in the appealed rejections.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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